

MISSOURI DEPARTMENT OF CONSERVATION



September/October 2021

Explor

TREES ARE
TERRIFIC

SOME ARE EVEN CHAMPIONS



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Have you got what it takes to bag big trees?

10 Terrific Trees

Attention, tree huggers! *Leaf* it to this field guide to help you get acquainted with your barky buddies.

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Male Hercules beetles use their horns to fight with rival males. The best beetle of the battle wins a girlfriend.

by Noppadol Paothong



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ON THE COVER

Big Tree Hunters
by David Stonner

GET OUT!

FUN THINGS TO DO
AND GREAT PLACES
TO DISCOVER NATURE



Keep an eye out for swarms of **GREEN DARNER DRAGONFLIES** feeding on flying insects.



Most birds, especially geese, migrate at night. Camp out when the moon is full to **WATCH AND LISTEN** for them.



ELK BEGIN BUGLING
at Peck Ranch. Plan a trip with details from
short.mdc.mo.gov/ZJJ.



LEAVE FALL LEAVES ON THE GROUND. Eastern red bats, pollinators, and other little critters need them for winter cover.

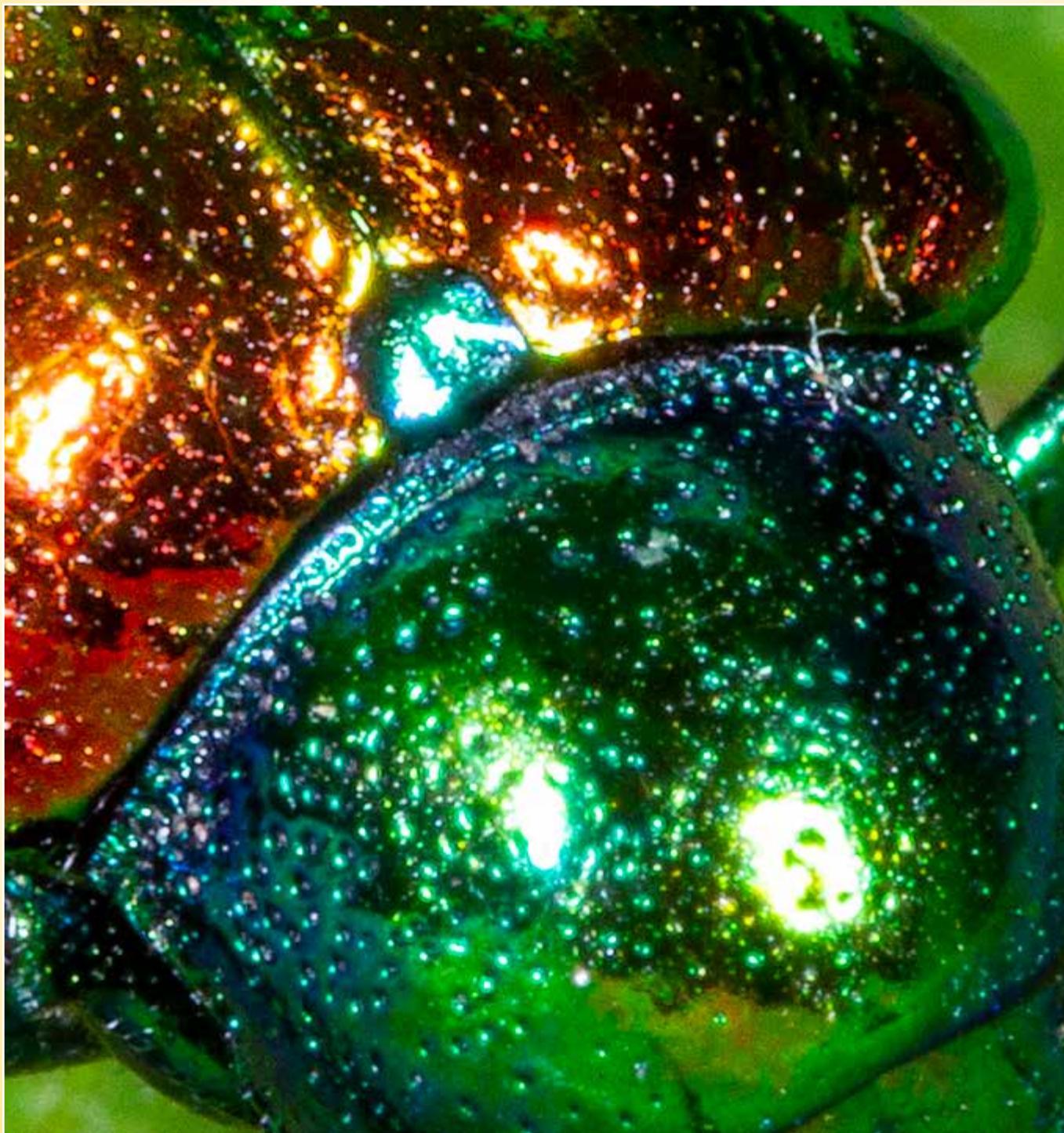
Pucker up!
PERSIMMONS BEGIN RIPENING
in September. Fruits that have fallen to the ground taste the sweetest.



WHAT IS IT?

DON'T KNOW?

Jump to Page 20 to find out.



- ➊ I may look like a jewel on a leaf.
- ➋ But my colors tell stalkers to stop.

- ➌ If they won't go away, I'll shoot stink in their face.
- ➍ And then into the grass I will drop.

Into the Wild firewood pile

LOOK

Pill bugs (aka roly-polies) often gather under stacked wood. Although they look like insects, they're more closely related to shrimp, lobsters, and crayfish. Like their aquatic cousins, pill bugs breathe with gills, which is why they hang out in cool, damp places.



You might be surprised at the pile of critters you'll find living in a stack of firewood.

Take a Closer Look

Downy Woodpecker

- Sparrow-sized
- Beak much shorter than head
- Spotted outer tail feathers



Hairy Woodpecker

- Robin-sized
- Beak nearly as long as head
- White outer tail feathers

Downy and hairy woodpeckers often visit wood piles, looking for insects to eat. Here's how to tell these head-banging birds apart.



Heads Up!

Don't move firewood from one location to another. Doing so can transport tree-killing pests that live inside the logs. Burn the wood near the place where you cut it.



LOOK

Eastern chipmunks often build their burrows under unused stacks of wood. If you see a chipmunk with chubby cheeks, it isn't overweight. The busy 'munk has stuffed its mouth with acorns and will store them in its burrow to eat during winter.



Did You Know?
Soil centipedes have between 27 and 191 pairs of legs, depending on which wiggly species you're watching. But they always — *always!* — have an odd number of leg pairs.

What Happened Here?

A spider doesn't have bones. Instead, armor-like plates on the outside of a spider's body protect its organs and help hold it together. When the spider grows too big, it sheds its exoskeleton and leaves the old armor behind.



LOOK

Sow bug killers have a scary name and even scarier fangs, but they're mostly harmless to humans. The spider uses its impressive jaws to pierce the tough armor of sow bugs and pill bugs. Though they may defend themselves if handled, their bite is less painful than many other spiders.



Take a Closer Look

Prairie lizards often bask atop logs and fences on cool fall mornings. But you'll need sharp eyes to spot them. The wary reptiles dart into crevices at the first sign of danger, and their drab scales help them disappear against barky backgrounds.





BIG TREE HUNTERS

by Bonnie Chasteen

HAVE YOU GOT WHAT IT
TAKES TO BAG BIG TREES?

FINDING BIG TREES TAKES
SAVVY, SKILLS, AND A LITTLE
HELP FROM A FRIEND.

Some big trees are easy to spot. Missouri's champion bur oak near McBaine stands like a giant in a bottomland crop field. This old fighter is 74 feet tall, 295 inches around, and its outermost branches reach 129 feet across. It's big!

Other champs are barely noticeable. Missouri's champion farkleberry (yep, *farkleberry*, aka winter huckleberry) is only 14 feet tall and 12 inches around. That's because it's naturally a small, shrubby tree. But every champion eventually falls — or someone (like you) finds an even bigger tree that takes its prize.



GET TO KNOW MISSOURI'S TREES

Before you head outside, take a little time to learn about Missouri's trees. To be a champion, a tree must be native to Missouri. You can find all 137 kinds that are qualified to be champions at mdc.mo.gov/champion-trees.

LOOK NEAR AND FAR

Trees grow big when they have few competitors. That's why almost half of Missouri's champions are found in farms, city parks, campuses, and cemeteries. In these places, trees can branch out and soak up the sun and rain. Missouri champions also tend to be found in conservation areas, state parks, and national forest lands. These places are carefully managed, but natural forces like storms can clear away weaker trees, leaving the strong to get even stronger (and bigger!).

CHAMPIONS BY THE NUMBERS

THE MOST POINTS

With a total of

456 POINTS,

a **bald cypress** on private land in New Madrid County is Missouri's biggest champion tree (and it has the biggest trunk).

2ND BIGGEST TRUNK

A **water tupelo** at Allred Lake Natural Area in Butler County is **322 INCHES AROUND**.

THE TALLEST

A **scarlet oak** at Lake Wappapello in Wayne County is **150 FEET TALL**.

THE WIDEST CROWN

A **cherrybark oak** in Scott City Park in Scott County has a crown spread of **138 FEET**.



Tree ID Tips

Every tree has a few features that will help you learn to spot it. Pay attention to leaves, nuts, fruit, and bark.

It also helps to carry a good tree field guide. Pack along the tree mini guide on Page 10, or get a copy of *Trees of Missouri Field Guide*.

HOW TO MEASURE A GIANT

Even before you start hunting big trees, it's fun to practice measuring trees in your yard, farm, or neighborhood park.

► Here's What You Need

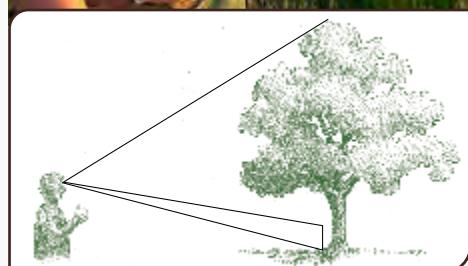
- A friend to help you
- 30 feet of rope or cord
- A clothespin
- Really long tape measure
- 4 tent stakes and 1 hammer (for your friend)
- Your thumb

► Here's What You Do

Champion trees are judged by their height, trunk circumference (length around) at 4.5 feet above ground, and crown spread (average width from dripline to dripline).

HEIGHT

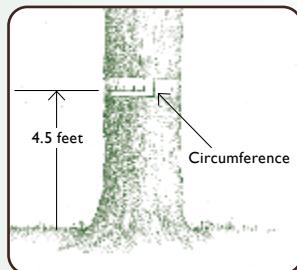
► If you know your friend's height (let's say it's 5 feet), have them stand right next to the tree. Raise your arm straight out and put your thumb up. Walk forward or backward until your thumb is the same size as your friend. Eyeball that spot, and then raise your hand up one thumb-length. Do this until you reach the top of the tree. Multiply the number of times you raised your thumb by your friend's height. If it was 10 times, your tree is 50 feet tall.



CIRCUMFERENCE

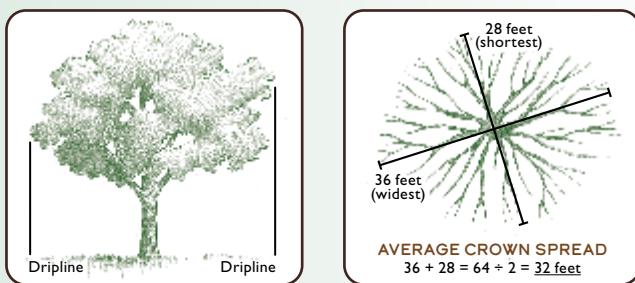
► Have your friend hold the end of the tape measure on the ground at the base of the tree. Pull the measure up along the trunk until you see the mark at 4 feet 6 inches. At this height, wrap rope or cord around the tree's trunk.

► When you get all the way around, clip a clothespin at the spot where the free end of the cord meets the place where you started. Stretch the cord out straight and measure from the end of the cord to the clothespin. This is the tree's circumference.



CROWN SPREAD

- ▶ Starting at the trunk, walk to the farthest edge of your tree's dripline. This is where the outermost branches would shed rainwater onto the ground. Hammer a stake in the ground or place a rock at that point. Go to the opposite side of the trunk and do this again.
- ▶ Do the same thing for the shortest line passing through the middle of the crown. Measure both distances with your tape measure.
- ▶ Add the two distances together and divide by 2. This is the crown's average spread.



► Add up Your Score

Here's the formula the Missouri Department of Conservation uses to figure out a point value for big trees:

$$\begin{array}{c} \uparrow \\ \text{HEIGHT} \\ \text{(IN FEET)} \end{array} + \begin{array}{c} \circlearrowright \\ \text{CIRCUMFERENCE} \\ \text{(IN INCHES)} \end{array} + \begin{array}{c} \longleftrightarrow \\ \text{1/4 OF THE AVERAGE} \\ \text{CROWN SPREAD} \\ \text{(IN FEET)} \end{array} = \text{TREE SCORE}$$

Your tree's score might look something like this:

$$\begin{array}{c} \uparrow \\ 15 \\ \text{(FEET)} \end{array} + \begin{array}{c} \circlearrowright \\ 28 \\ \text{(INCHES)} \end{array} + \begin{array}{c} \longleftrightarrow \\ 8 \\ \text{1/4 OF THE AVERAGE} \\ \text{CROWN SPREAD} \\ \text{(32 FEET ÷ 4 = 8)} \end{array} = 51$$

► Send in Your Contender

If you think your tree could beat the current Missouri champion, take a pic, and send it to the Missouri Department of Conservation's Champion Tree Program. Before you do, be sure to visit mdc.mo.gov/champion-trees to check the current list of champion trees and download the nomination form.



Plant a Future Champion

Every year, the George O. White State Forest Nursery grows millions of tree seedlings for conservation projects and wildlife habitat. They're inexpensive and easy to order. The seedling you plant could become a future champion. Order at mdc.mo.gov/seedlings.

TERRIFIC TREES

Bet you can't get through today without using something that comes from trees. If you're reading this magazine, you've already lost — paper, of course, comes from trees. So does the lumber in your house, the circuit board in your smartphone, and the diapers on your baby brother. Trees provide homes for animals, produce the oxygen we breathe, offer shade on a summer day, and hold soil in place so it doesn't wash away. In short, trees are terrific!

Over 150 kinds of bark-covered beauties grow in Missouri. Next time you explore your backyard, a city park, or a shady forest, look closely at each tree's leaves, bark, and seeds. You'll soon be able to tell one tree from another.



by Matt Seek

But First, Make This Field Guide

- 1 Cut out the next two pages along the dotted lines.
- 2 Fold each cutout down the middle.
- 3 Stack the cutouts so the pages are in numerical order.
- 4 Staple the cutouts together at the fold between pages 8 and 9.
- 5 Take your mini tree guide along on your next walk in the woods.



mdc.mo.gov

YOU DISCOVER TREES



Bur oak

A Mini Field Guide to 14 Terrific Trees

16

1

FLOWERING DOGWOOD



Habitat Prefers well-drained soils on wooded slopes, ridges, and field edges.

ID Clues Flowering dogwood is more of a shrub than a tree. In the spring, it unfurls beautiful, white, flower-like bracts. In the fall, it produces red, football-shaped berries.

That's Nuts! Flowering dogwood is Missouri's official state tree.

fall Color



BLA(K) OAK



Habitat Found on rocky ridges, glades, and along the edges of woods.

ID Clues The inner bark is mustard-yellow to orange. Like all oaks in the "red oak group," this tree has leaves with pointy tips.

That's Nuts! Native Americans used black oak bark to make tea that they drank to cure everything from asthma to diarrhea.

fall Color



WHITE OAK



Habitat Prefers dry slopes but can be found in nearly any forest, woodland, or savanna statewide.

ID Clues The blocky bark becomes scaly on large limbs. In open areas, white oaks may grow wider than they are tall.

That's Nuts! White oaks are one of the longest living shade trees in Missouri. Some have lived over 450 years!

fall Color



2

EASTERN RED (EDAR)



Habitat Found nearly everywhere: open, rocky woods, glades and bluffs, pastures, roadsides, and fencerows.

ID Clues Cedars have aromatic, evergreen, needlelike leaves. They produce small, bluish-purple berries.

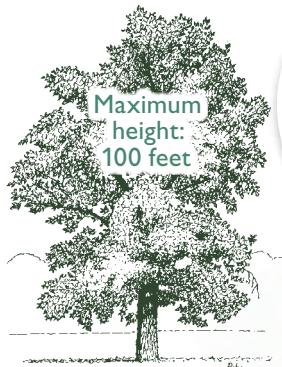
That's Nuts! Many trees are both male and female. Cedar trees usually have separate sexes. Male cedars produce tiny cones. Females produce berries.

fall Color



15

SHAGBARK HICKORY



Habitat Found in bottomland forests along streams and upland forests on slopes and ridges.

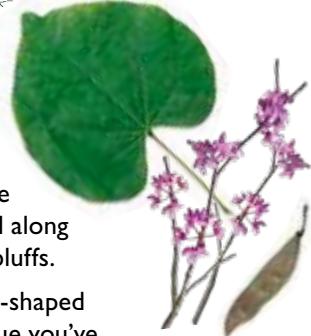
ID Clues The long, shaggy strips of bark on this tree's trunk are a dead giveaway. Also look for tasty nuts that begin dropping from the tree in September.

That's Nuts! During summer, endangered bats raise their babies and sleep under this hickory's shaggy bark.

fall Color



EASTERN REDBUD



Habitat Found in open woodlands, the edges of woods, and along rocky streams and bluffs.

ID Clues The heart-shaped leaves are a good clue you've found a redbud. In the spring, redbuds produce colorful pink flowers. In the fall, they produce beanlike brown pods.

That's Nuts! Redbud flowers are edible. They have a sweet, nutty taste.

fall Color



4

13

EASTERN COTTONWOOD



Habitat Occurs in damp lowlands near streams and rivers.

ID Clues In June, cottonwoods release tiny brown seeds that are attached to fluffy, cottonlike fibers. A large tree can produce 25 million seeds!

That's Nuts! Cottonwood is Missouri's fastest growing native tree. Under ideal conditions, it can reach a height of 50 feet in just six years.

Fall Color



12

AMERICAN ELM



Habitat Grows best in low, damp ground in valleys and along streams.

ID Clues Elms usually have a spreading, fan-shaped crown. The upper surfaces of their leaves are shinier than the undersides.

That's Nuts! American elms were once widely used as shade trees along city streets. Unfortunately, a disease wiped out thousands of the elms that were planted.

Fall Color



10

BLACK WALNUT



Habitat Grows in damp woods at the foot of hills and bluffs, in valleys along streams, and in open woods.

ID Clues When crushed, the leaves release a distinct odor. Tennis-ball-sized nuts covered in thick green husks drop from the tree in September.

That's Nuts! Walnuts produce a poisonous chemical that prevents other plants from growing nearby.

Fall Color



5

AMERICAN SYCAMORE



Habitat Found on floodplains (where they grow massive in rich soils), bottomland forests, and along rivers.

ID Clues The upper trunk and branches usually have smooth white bark. In the fall, sycamores produce brown seed-balls that remain on the tree over winter.

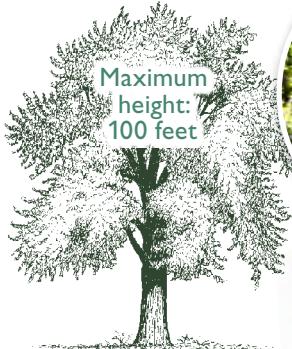
That's Nuts! About 98 percent of all great blue heron nests in Missouri are found in sycamore trees.

Fall Color



7

SILVER MAPLE



Maximum height: 100 feet



Habitat Found in bottomland forests, at the edges of streams, and planted around homes.

ID Clues Silver maples release “helicopter” seeds in late spring. The underside of each leaf is whitish-silver. When the leaves flutter in the wind, the tree looks silver.

That's Nuts! Silver maples grow quickly but tend to have weak branches that may break in wind, snow, or ice storms.

fall Color



6

HACKBERRY



Maximum height: 90 feet



Habitat Grows in damp woodlands throughout Missouri.

ID Clues If you see a tree with a “warty” trunk, you’ve probably found a hackberry. Hackberries produce reddish-orange berries that turn purple and stay on the tree through winter.

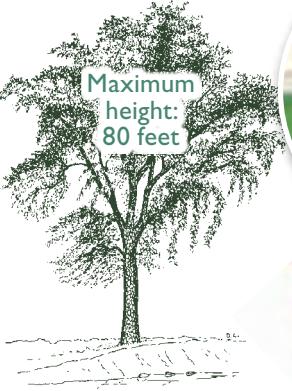
That's Nuts! Hackberry fruits are sweet and edible, perfect for munching on a fall hike. But be careful! Other plants have poisonous berries.

fall Color



11

RIVER BIRCH



Maximum height: 80 feet



Habitat Usually found in damp ground along streams.

ID Clues Peeling, papery bark is a good clue you’ve found a river birch. The leaves are smooth and green on top and fuzzy and lighter (almost white) underneath.

That's Nuts! River birches sprout quickly on bare stream banks. Their roots help hold the soil in place so it doesn’t wash away.

fall Color



GREEN ASH



Maximum height: 80 feet



Habitat Occurs in bottomland forests along streams, sloughs, swamps, and ponds.

ID Clues Deep grooves in this tree’s bark form diamond patterns.

That's Nuts! Ash trees have historically been the preferred wood for making baseball bats.

fall Color



8

9

TREE-RIFFIC TREASURE HUNT

It's time to branch out! How many of these tree-related treasures can you find?



THE STRUGGLE TO SURVIVE ISN'T ALWAYS A FAIR FIGHT

THIS ISSUE:

illustrated by
David Besenger

RUSTY SPIDER WASP VS WOLF SPIDER

Eight-Legged Agility

Wolf spiders don't spin webs. They use speed and agility to run down prey.

Frightful Fangs

Needle-sharp fangs easily pierce insect armor and inject venom.

Iron Jaws

Strong jaws help the wasp drag victims home to its underground nest.

Stun Gun Bun

A female wasp's business end is tipped with a zappy, stabby stinger.

AND, THE WINNER IS...

One stab from the wasp's stinger, and the spider is paralyzed. After dragging it to her nest, the wasp lays an egg on the still-alive spider. When the baby wasp hatches, the spider will become its first meal.

STRANGE but TRUE!

YOUR GUIDE TO ALL THE
UNUSUAL, UNIQUE,
AND UNBELIEVABLE
STUFF THAT GOES ON IN NATURE



Despite having eight eyes, **STRIPED BARK SCORPIOS** have terrible vision. To make up for poor peeper power, sensitive hairs on their pinchers help them feel the movements of prey, and organs on their undersides help detect odors.



GRAY SQUIRRELS bury acorns to snack on later. But the nutty mammals often forget about most of the acorns they hide — in one study, 74 percent weren't dug back up. Left underground long enough, the seeds sprout into baby oak trees.



Standing nearly 3 feet tall and tipping the scales at up to 90 pounds, the **AMERICAN BEAVER** is Missouri's largest rodent. Our smallest rodent, the **PLAINS HARVEST MOUSE**, is only 5 inches long (including its tail) and weighs less than 10 raisins.



Contrary to what cartoons might lead you to believe — beep, beep! — a **COYOTE** would have little trouble outrunning a **ROADRUNNER**. The fleet-footed birds reach speeds of about 20 mph. Coyotes, on the other paw, can hit a howling 43 mph.



JACK-O'-LANTERN MUSHROOMS

are well-named. Not only are they pumpkin-orange, but they also glow in the dark! The spooky, greenish-blue glow comes from the mushroom's gills and can be seen only in pitch-black conditions.



CAVE SALAMANDERS

can "feel" the Earth's magnetic field. This built-in compass helps the flame-orange amphibians find their way around the darkest corners of caves where there's no light to help them see.



Biologists believe that **BIRDS**, especially those that fly nonstop for days during migration, take short naps in midair. But the soaring snorers aren't likely on autopilot. A bird can leave half its brain wide awake while the other half rests.



HOW TO



.....

Grow Milkweed

Monarch butterflies are in trouble. For every one you see today, 20 years ago there were four additional monarchs fluttering around. Biologists believe habitat loss, pesticide use, and climate change are causing the iconic insects to die off. You can help save the monarch by planting a patch of milkweeds. Here's how.



WATCH FOR MONARCHS

Monarchs return to Missouri by May and begin laying eggs. Watch for females fluttering above your milkweed patch, and check each plant closely for tiny eggs and caterpillars.

FIND SOME MILKWEED

Baby monarchs — aka caterpillars — are picky eaters. Milkweed is the only thing they'll munch. Luckily, Missouri has more than a dozen kinds of milkweed. Look for it along roadsides and fencerows, in pastures and prairies, and at the edges of fields, woods, and wet areas. For identification help, search for "milkweed" at mdc.mo.gov.



SOW THE SEEDS

Fill some flower pots with potting soil. Plastic food containers (like yogurt cups) work well if you poke drain holes in the bottom. Place a few seeds on top of the soil (about one seed per inch). Sprinkle a little soil over the seeds and press down firmly.

PICK SOME PODS

In the fall, milkweeds produce pods filled with dozens of fluffy seeds. You can tell seeds are ready when the pod turns grayish-tan, splits open with a gentle squeeze, and the seeds are chocolate-brown. When you find a ripe pod, scoop out the seeds and silk, and place them in a paper bag. Harvest only a few pods from each location. Leave most for nature!



CHILL OUT

Set the pots outside in an exposed, sunny location. Cold weather won't kill the seeds. In fact, ice, snow, and rain will help "wake" them up so they'll sprout in the spring.

LOSE THE FLUFF

To separate the seeds from the fluffy silk, drop a few pennies in the paper bag, fold down the top, and shake it. Then, snip a small hole in the bottom of the bag so you can pour out the seeds and keep the silks trapped inside.



PLANT THE SPROUTS

When the sprouts have grown at least three pairs of leaves, you can gently transplant them to a sunny, weed-free location in your yard. Milkweed is a perennial, which means it will grow back every spring.

XPLOR AOR

Silver eels

Slippery Sea Challenge

Imagine traveling to a place you haven't seen since you were no bigger than a willow leaf. To get there, you must swim thousands of miles. Along the way, you'll face predators, pollution, diversions, and dangerous weather. Sound scary? It is. In this game, you'll help an American eel achieve her final mission: return to the Sargasso Sea to start the next generation.



American eels migrate into rivers throughout the eastern United States and Canada.

Near Cairo, the Ohio River flows in, doubling the Mississippi's width. Roll again.	A hungry heron tries to catch you. Lose a turn.	You head downstream toward the Gulf of Mexico.	In September, you get a sudden craving for the taste of saltwater.	What a shock! A scientist put a tracking device inside your belly and then let you go.
You're in the Lower Mississippi River now, and you're doing swimmingly.	You slide into a side channel. Lose a turn while you swim back to the main channel.	A paddleboat churns overhead. You must be swimming past Memphis, Tennessee.	What's all this trash in the water? People should be more careful!	At night, you accidentally swim into an old bottle. Lose a turn.

How To Play

Gather three pennies and an assortment of small objects to use as game pieces. Place a game piece for each player on the square marked "start." Take turns tossing the pennies, counting how many land heads-up, and moving the game pieces forward that many spaces. Don't forget to read what's printed on the squares. The first player to finish wins.

WHAT IS IT? — FROM PAGE 3 —

ground. Where does the beetle get its chemical superpower? From the plant it's named after. Dogbane sap is toxic to most critters, but the beetle eats it without harm. Learn more at mdc.mo.gov/field-guide.



The dogbane leaf beetle sure is pretty, but its ever-changing rainbow of colors is a warning: *Don't get too close.* It can shoot streams of stinky goo into the faces of would-be bug-munchers, giving it time to drop safely to the

EEL

Start

Finish

Your journey begins in the Mississippi River near Cape Girardeau.

But you're not done yet. Swim a victory lap and take another turn.

Congratulations! You've completed one of the greatest unseen migrations on Earth!

Eel larvae

You hide in underwater root wads during the day, and at night you hunt for crayfish.

Now, you're about 3 feet long, and you weigh around 4 pounds.

For the last 20 years, you've prowled the river's murky main channel.

You're drifting off course, but the Canary Current pushes you in the right direction.

Yellow eel

You've recently changed color, turning from yellow to silver. What's happening?

You swim into an irrigation ditch, and the gate closes behind you. Lose a turn.

You crawl out of the ditch and back to the river. Move ahead one space.

Wheeee! A strong river current sweeps you ahead. Roll again.

Oh, no! An angler caught you in a net. Lose a turn.

The murky Atlantic gives way to clear, blue water. Roll again.

A big rainstorm washes crayfish into the river, but you're not hungry now. Swim ahead one space.

Being able to crawl across damp ground toward water is one of your superpowers.

You pass a tugboat and feel a funny ping in your belly.

Stormwater washes pollution into the river and makes you sick. Skip a turn to recover.

This angler is a friend of migrating eels, so he puts you back. Roll again.

Near Bermuda, you start to see more American eels swimming your way.

Glass eels

The Big Rivers Science Unit gets a signal that you've traveled 688 miles.

The first patch of yellow sargassum, a free-floating seaweed, drifts overhead.

Hurricane Rostrata washes you into Lake Pontchartrain. Lose a turn.

You swim by a long stretch of rough rocks near New Orleans.

But your journey is far from over. Roll again.

Elver

The North Atlantic Current carries you toward your destination.

Look out! Extreme weather is making the Gulf Stream wobble. It pushes you back a square.

For the next few hundred miles, the weather is fine. Roll again.

A big catfish tries to eat you, but you slip into a tangle of cypress tree roots. Roll again.

The water is starting to taste salty, and you see familiar fish like striped mullet.

In the Rigolets Strait, you high-fin some young brown eels heading upstream.

At last! You're back in Gulf Stream waters.

You've made it from Cape Girardeau all the way to the Gulf of Mexico!

But you've got 2,000 miles to go. Roll again.

Near Key West, you wave your fin at some tiny little eels that are clear as glass.

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CRITTER CORNER

Three-Toed Box Turtle



Did you ever see such a cute little turtle?! Baby three-toed box turtles hatch in late summer and early fall. They eat mostly earthworms and insects until they become adults. Then they start eating plants, berries, and mushrooms. As the days get shorter and the nights turn cooler, this little guy (or gal) will start looking for a place to spend the winter — like under a nice heap of leaves in your yard. Learn more at mdc.mo.gov/field-guide.